



IN THE CLAIMS

Please amend claim 1 and cancel claims 8-19 as follows:

1. (CURRENTLY AMENDED) A monolithic wavelength converter assembly using a common layer structure comprising:
a widely-tunable laser, traveling-wave photodetector (TWPD) and traveling-wave modulator (TWM), wherein the TWPD converts an input signal on a first lightwave, which is an input signal, with a first wavelength creates into an electrical signal in the TWPD that then propagates along a first interconnecting electrical transmission line to the TWM, where the TWM imprints the electrical signal is imprinted onto a second lightwave, which is an output signal, with a second selectable wavelength derived from the widely-tunable laser, and the electrical signal continues to propagate along a second interconnecting electrical transmission line to a load resistance, R_L .

2. (ORIGINAL) The monolithic wavelength converter assembly of claim 1, wherein an electrical impedance of the TWPD, the first and second interconnecting electrical transmission lines, and TWM all are equal to R_L .

3. (ORIGINAL) The monolithic wavelength converter assembly of claim 1, wherein an electrical impedance of the TWPD, first and second interconnecting electrical transmission lines, TWM and R_L are different, but are chosen to maximize an optical-to-optical signal conversion efficiency or output signal level.

4. (ORIGINAL) The monolithic wavelength converter assembly of claim 1, further comprising a semiconductor optical amplifier (SOA) preceding the TWPD to preamplify the input signal to improve electrical signal level, modulation extinction, output optical signal level or wavelength conversion efficiency.

5. (ORIGINAL) The monolithic wavelength converter assembly of claim 1, wherein the TWPD is a high saturation power photodetector.



6. (ORIGINAL) The monolithic wavelength converter assembly of claim 5, wherein an effective bandgap of an absorber within the TWPD is decreased from larger than a photon energy to lower than the photon energy from an input to an output of the TWPD.

7. (ORIGINAL) The monolithic wavelength converter assembly of claim 1, wherein the wavelength converter assembly provides for optical signal regeneration without using electronic circuits.

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